Pioneer DV-505
DVD/Video CD/CD Player

Code Switchable Modification

Instruction and Installation Manual

WARNING

1. **Performing the modification detailed in this document will invalidate any warantee given to you by the retailer from whom you purchased your player.**
2. **Presence of this modification in your player may cause an authorised service centre to refuse to work on your player.**
3. **The authors do not warantee this modification in any way. This document merely documents the techniques used by other owners of these players. You perform this modification entirely at your own risk.**

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Chapter 1
Overview

1.1 What Is Region Coding

For many years the movie industry has, for it's own convience, divided up the world into a number of territories. In each of these territories, a local distributor handles the distribution and promotion of each movie. These days most movies follow a fairly basic pattern of releases - first at movie theaters, then for video rental, then for subscription cable channels, then for video sell-thru and finally for TV broadcast. Each of these releases usually takes place a certain number of months after the previous one. However over time for a number of reasons, the pattern has become staggered so that for any given movie that is still in movie theaters in Europe or Africa, it may already be available on video in the US and Canada.

With the reduction in global trade barriers and the growth of the Internet, it has become very easy for people to import video cassettes and discs from other parts of the world. Rather than accept this reality, the movie industry has sort to re-enforce the status quo by forcing new technologies to include restrictions and devices to hinder the free flow of international trade. The DVD Video format is a victim of exactly this kind of restriction in the form of the "Region Coding" mechanism.

The region coding is designed to ensure that a consumer in a given territory is only able to buy the DVD discs issued by the local distributor, and is thus forced to pay inflated prices, wait longer for the release to be available, and accept a smaller range of titles and often inferior versions without the enhancements available in the US version of the same DVD disc.

The world is divided into six regions for the purposes of DVD Video, although it is clear that some region codes have deliberately paired countries using different TV system to further purturb the cross-importation of products within those regions. The main ones are Region #1 - North America, Region #2 - Japan and Europe, Region #3 - South East Asia, and Region #4 - Australia and South America.

1.2 Codefree Vs. Code Switchable

In the terminology of making DVD Video players free of the constraints of region coding there are two distinct types of modification, the Codefree player or the Code Switchable player. The difference is an important one.

A codefree player is one that will attempt to play any disc. Since in the official specification for DVD Video it is the responsibility of the player to enforce region coding, it is possible to modify a DVD player so that it doesn't do the enforcement. In some cases this involves the player merely playing the disc despite a region code mismatch, but more commonly it involves setting the player region code to #0 which theoretically allows it to play anything. The constraint on this is that some recent US DVD releases - MGM and Disney titles are notable examples - use the scripting language within the DVD Video specification intended for writing on-screen menus etc to enforce the regional lockouts. These titles will refuse to play on a region #0 player. Some more advanced codefree modifications may now probe the disc for it's region code number and answer back with that number.

A code switchable player acts as if it is a genuine player of the region number to which it is currently set. Thus if it is set to Region #2, it will refuse to play a Region #1 DVD Video disc. A quick change of region number and it will of course play the disc without further complaint. This approach has both advantages and disadvantages.

The advantages are that in many cases, this modification for the Pioneer DV-505 included, there are no changes required to the software that controls the player. The method used in the factory to set the initial region code is merely re-enabled. Secondly, it is hard to imagine that a DVD Video disc could detect that any given player is actually capable of being re-configured to another region code making countermeasures of the kind seen against Region #0 players difficult to devise.

The main disadvantage is that the user of the player has to be aware of the whole issue of region coding, of which region each disc they want to play requires, and of the key press sequence needed to effect the change of region number.

In part, this manual has been written to help people with these players explain the issues to their family and friends who may have cause to use the modified player.

1.3 How it applies to the DV-505

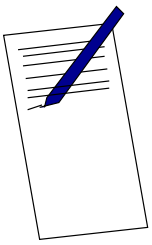
The Pioneer DV-505 player in itself demonstrates just how silly the whole region locking mechanism is, since the player itself is built in a single version for the entire world. Even those versions of it sold to the US market include full and complete support in hardware and firmware for the PAL television system.

It has been known for some time that the Gold-coloured version of the DV-505 player sold in South-East Asia is capable of being code switched as sold from Pioneer. This modification details how to use the code switching feature, and how to re-enable it on players sold in other markets around the world where Pioneer have choosen to disable the code switch feature before the player leaves the factory.

The table in appendix C of this document shows the various versions of the DV-505 that are known to have been successfully modified by this proceedure.

Chapter 2
Operating Instructions

2.1 Determining the current region code



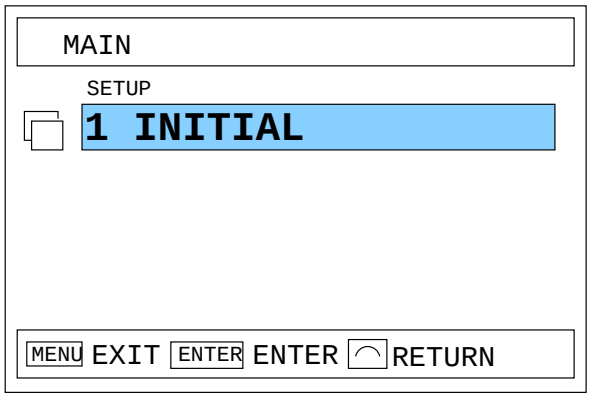
Please Note

These steps should be performed with the disc drawer open or when there is no disc inside the player.

This proceedure can only be performed from the remote control.

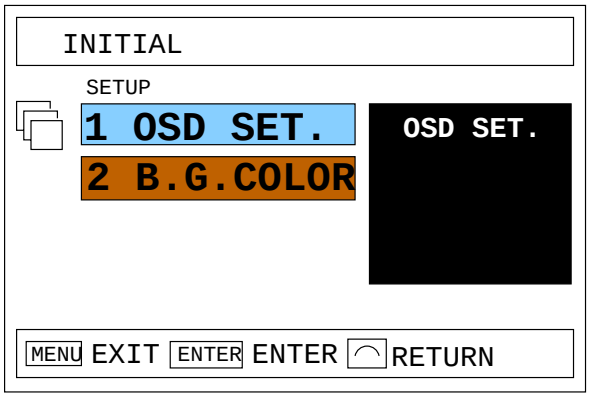
Step 1 - Press the button marked MENU on the remote

This will display a simple menu with only one option on it - 1 INITIAL - for the initial setup options.



Step 2 - Press the button marked 1 on the remote to select the Initial setup menu.

The on-screen menu screen changes to include a display canvas which at present says just OSD SET. (standing for On Screen Display Settings).



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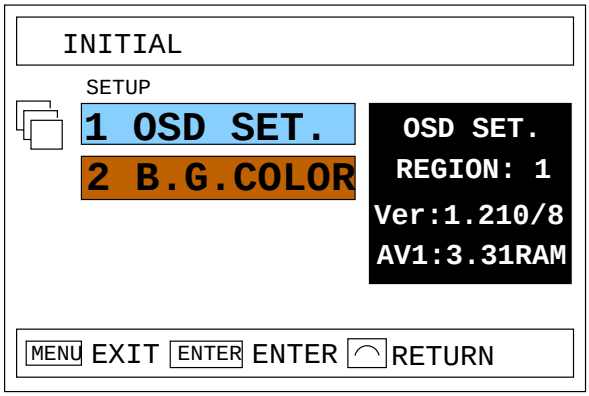
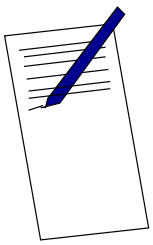
Step 3 - Press the button marked DISPLAY on the remote

The previously blank area below the O.S.D. message will be filled in with details of the current region code, player control software version no and the MPEG-2 chip version no.



Step 4 - Elther press the button marked MENU on the remote to finish OR proceed directly to setting the region code.

2.2 Setting the region code



Please Note

- These steps should be performed with the disc drawer open or when there is no disc inside the player.
- This proceedure can only be performed from the remote control.
- Unless you have the gold colored South-East Asian version of the DV-505, the hardware modification detailed in chapter 3 will need to have been carried out for this to work.

Step 1 - Get to the Region Code display screen (see 2.1 above)

Step 2 - Press the button marked CONDITION on the remote

- The on-screen display remains unchanged.

Step 3 - Press the number button for the desired Region No

- The DVD case should have the region number required to play the disc written inside a globe logo alongside the other technical details about the disc at the bottom of the rear cover.

continued over...

Step 3 (continued) -

Press the number button for the desired Region No

Press 1 on the remote

This symbol indicates that this disc is intended for the USA and Canada and requires that the player be set to region #1 in order to play it.

Press 2 on the remote

This symbol indicates that this disc is intended for Japan and/or Europe and requires that the player be set to region #2 in order to play it.

Press 3 on the remote

This symbol indicates that this disc is intended for South-East Asia and requires that the player be set to region #3 in order to play it.

Press 4 on the remote

This symbol indicates that this disc is intended for Australia/New Zealand or South America and requires that the player be set to region #4 in order to play it.

Press either 2 or 3 on the remote

This symbol indicates that this disc is intended for use in Europe, Japan and South-East Asia and can be played on either a region #2 or region #3 player. You can set your DV-505 to either when you want to play this disc.

There are other combinations of course, and the numbers within the logo will reflect this. A disc playable in all regions will either be marked as such using the logo below or may not be marked at all. (Of course, it would not be surprising to find a US distributor failing to mark it correctly...)

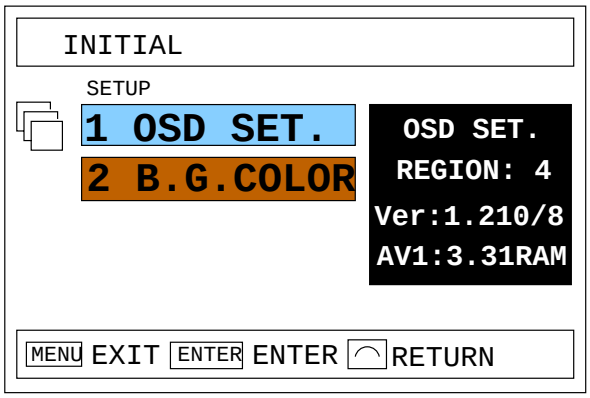
continued over...

Step 3 (continued)

You do not need to change the region code in order to play this disc.

As soon as you have pressed the button on the remote corresponding to the desired region number, it will be updated on the screen.

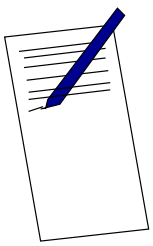
In this example we have switched from region #1 to region #4.



Step 4 - Press the MENU button

This confirms the change and returns you to the blue (or black) screen.

You can now play the DVD discs of the region number you have set the player to. You will not have to make any further changes until you wish to play a disc with a different region number.



Please Note

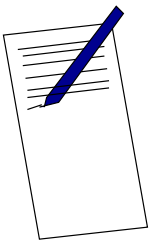
No harm comes to the player or disc as a result of a failed attempt to play a disc of the wrong region. The player will display "Wrong Region No." and eject the disc tray. At this point you can set the player to another region no and try again.

It is not possible to set the DV-505 to region code 0 in order to emulate a codefree player. Only numbers 1 through 8 are valid - only 1 through 6 are currently used DVD Video region codes.

It is actually possible to change the region code with a disc inside the player once you've pressed STOP, but the menus are different from those described above.

Chapter 3

Performing The Modification

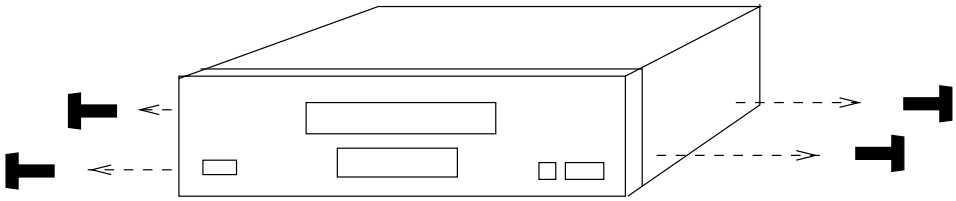


Please Note

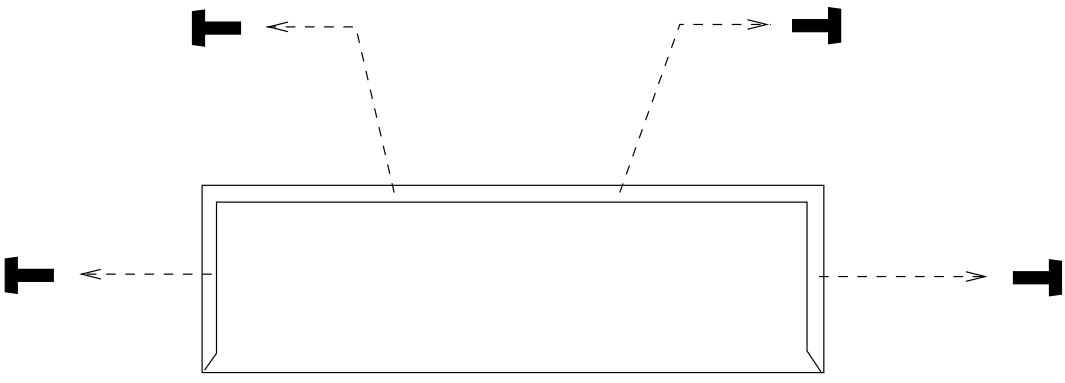
- Disconnect the mains power before opening the unit.
- You will need a mid-size Philips screwdriver, a thin-tipped soldering iron (25 watt max) suitable for electronic work, and a length of self-fluxing solder.
- You should have some experience of using a soldering iron for electronic work. If you don't have such experience you would be well advised to seek helo from someone who does.
- You will be invalidating the warantee by opening the player.

3.1 Opening the player

Step 1 - Remove the four side panel screws



Step 2 - Remove the four rear panel screws



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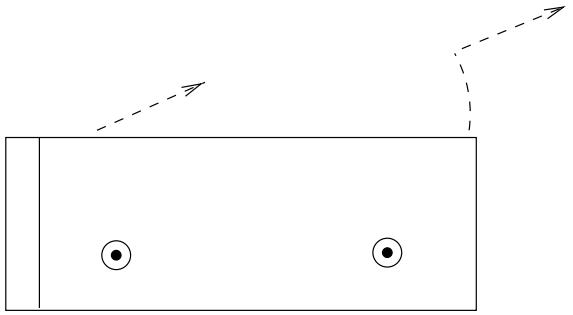
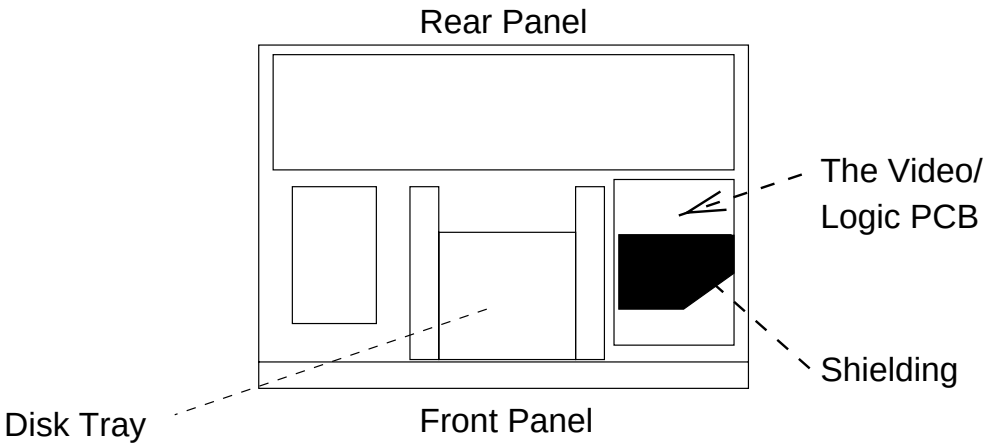
Step 3 - Lift the cover and remove

Lift the cover at the rear first and then hinge up to about 45 degrees, then move cover away from the base.



3.2 Removing the PCB

Step 1 - Locate the Video/Logic PCB

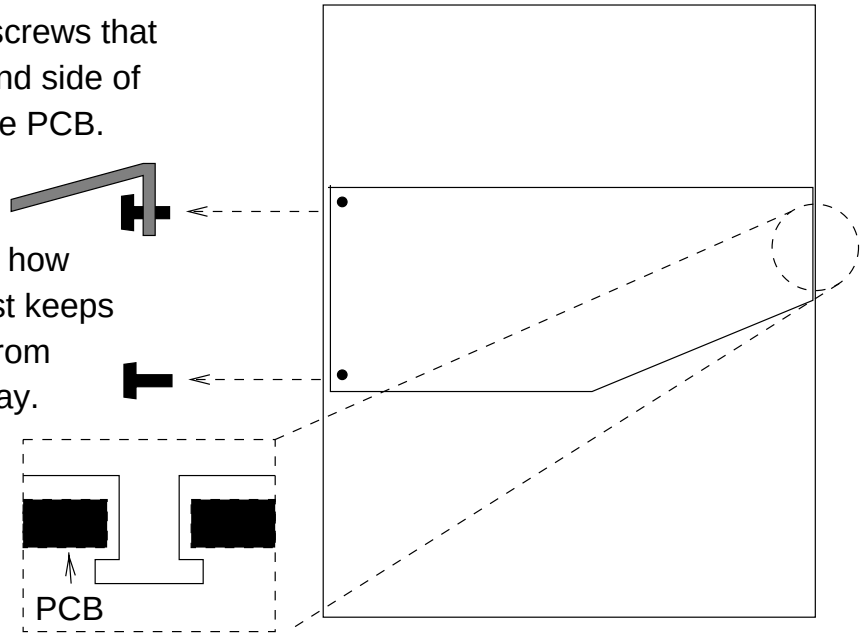


Step 2 - Remove the shielding from the board

Remove the two screws that secure the left-hand side of the shielding to the PCB.

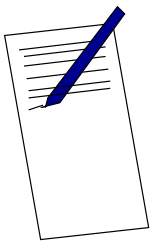
Be careful to note how the protruding post keeps the ribbon cable from fowling the disk tray.

Unhook the shield from the right hand side notch in the PCB.



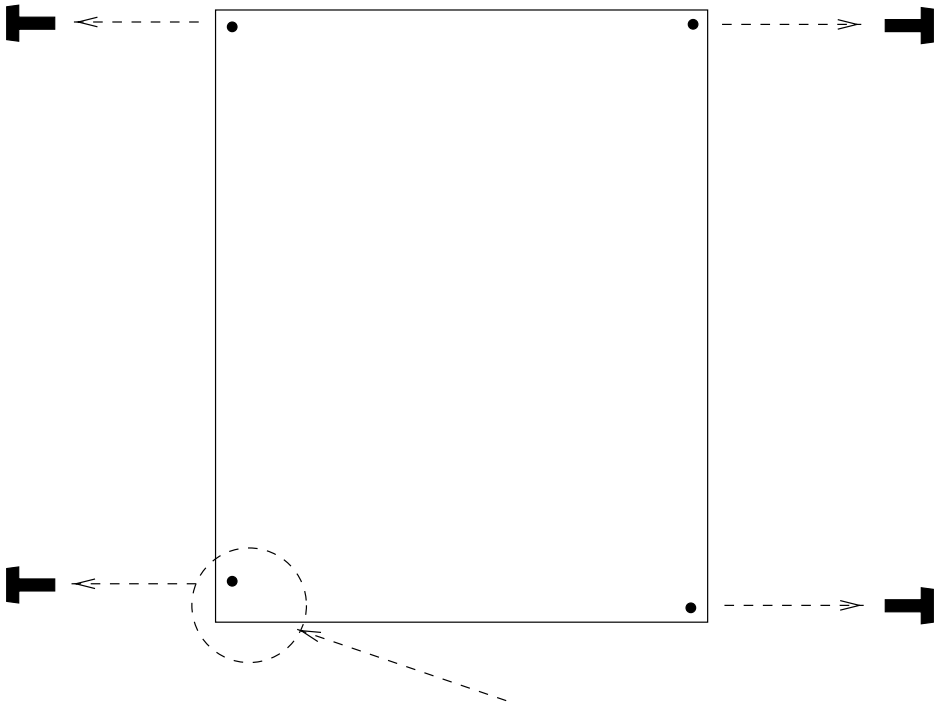
continued over...

Step 3 - Remove the four screws holding the PCB in place and turn the PCB over being careful to make sure none of the ribbon cables are fowled.



Please Note

The PCB cannot be removed from the player easily. It is perfectly possible to do the modification within the freedom of movement allowed by the ribbon cables connecting the Video/Logic PCB to the rest of the machine.



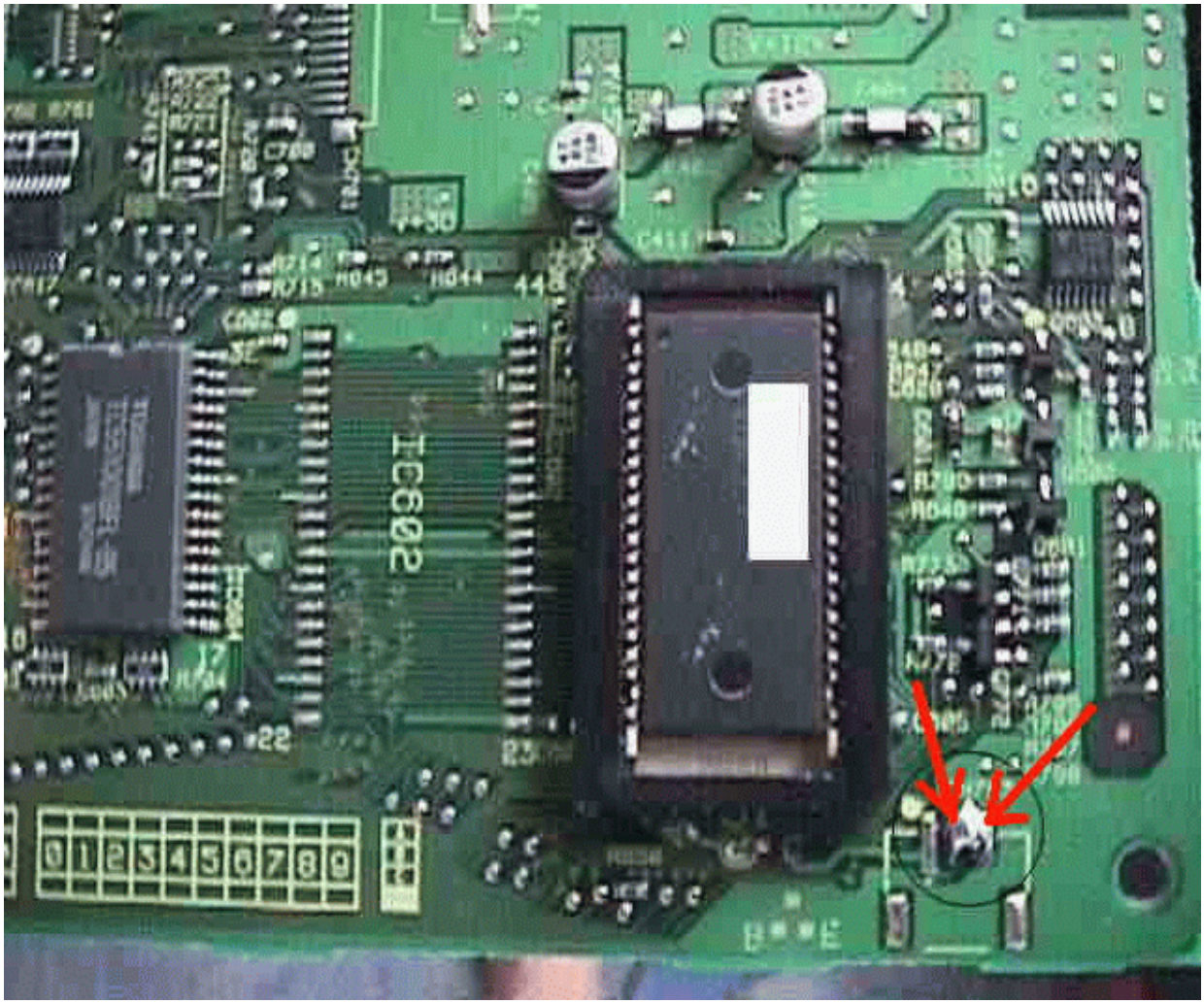
The underside of this part of the PCB is where the modification needs to be performed.

Once you have unscrewed the PCB, it should be fairly easy to flip it over. Because most of the ribbon cables connect down the left hand side of the board as it is situated in the player, it is easiest to flip it such that it is sitting over the disc tray assembly.

If you are perching the PCB over the disc tray assembly it may be a good idea to insert a piece of paper under the PCB to guard against solder splashes getting on the disc tray assembly.

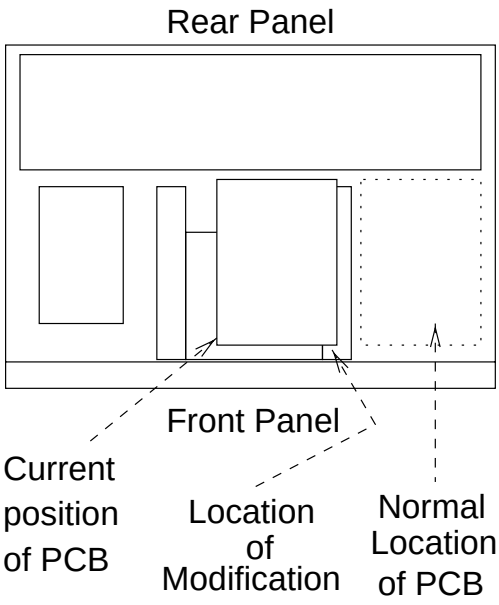
3.3 Making the modification

Step 1 - Locate the three contacts shown on the picture



Looking at the underside of the PCB, the three contact points are near the hole for the mounting screw on the right hand bottom corner of the board as you look at it.

The marking on the PCB for IC602 is a good point of reference. The actual contacts themselves appear to be labelled CN705.



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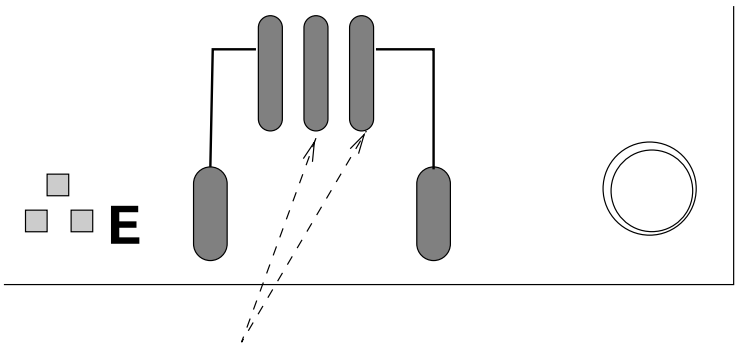
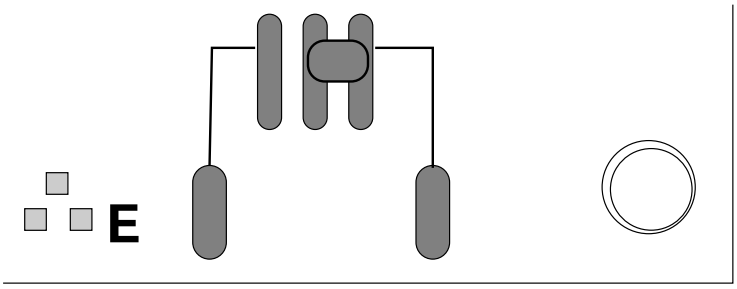
Step 2 - Join the center and right contacts together with a small blob of solder; being careful not to heat the contacts too much with the soldering iron.

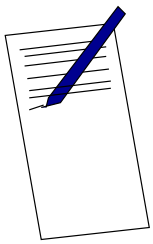


These two contacts need to be "shorted" together



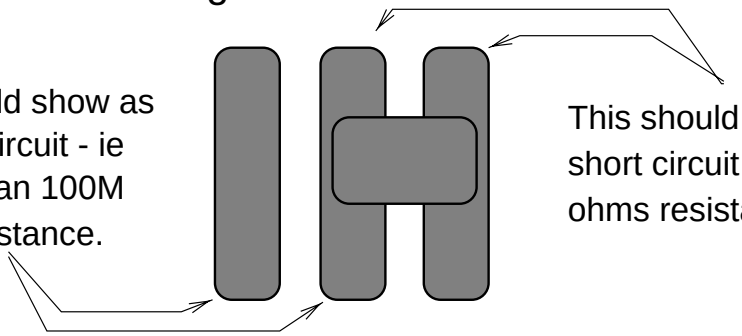
You need to join the center and right hand contacts together using a small blob of solder between the two as shown in the illustration above. Be careful not to put too much solder on; it just needs to make a connection.

Step 3 (optional) - Check connections will a test meter



Please Note

This should be done with a low voltage continuity tester such as a multimeter set to the Ohms impedance range.



This should show as an open circuit - ie greater than 100M ohms resistance.

This should show as a short circuit - ie zero ohms resistance.

3.4 Testing the modification

Step 1 - Replace the PCB and secure with the four screws

This is simply the reverse of Step 3 of Removing The PCB (Page 12)

Step 2 - Hook in the shield and secure with two screws one of which also supports the protruding post

This is simply the reverse of Step 2 of Removing The PCB (Page 11). Carefully re-thread the ribbon cable to the right of the protuding post to ensure it does not fowl the disk tray.

Step 3 - Replace the cover

➡ It is not necessary to secure the cover at this point.

Step 4 - Reconnect the player and test it still works as it did before.

➡ If it does not, disassemble the player again, desolder the modification and try to make it look as it did before. Then take it to a service center and ask them to repair it. It is your decision whether you tell them the truth or risk them finding out.

Step 5 - Try changing the region code as detailed in Chapter 2

Step 6 - Reassemble the player replacing the screws

Step 7 - Purchase a DVD disc of another region and try it

Appendix A
Region Codes

Number	Areas
1	USA and Canada
2	Europe, Japan, South Africa, Middle East
3	South-East and East Asia
4	Australia, New Zealand, Central & South America
5	Former Soviet Union, India, Africa
6	China

Appendix B
Regional Variants of the DV-505

- Basic DV-505 as sold in USA
- Gold-colored DV-505 sold in South-East Asia is already code switchable
- Black DV-505 sold in Europe has a SCART euroconnector and PAL/NTSC written on the front panel, bottom right.

Appendix C
Modification Reports

There have to date been no reported failures of this modification.

Model	Version	Original Region	Purchased In
DV-505	1.210/8	1	USA
DV-505	1.000/8	2	England
DV-505	1.304/4	2	Holland
DV-505	1.304/4	3	Taiwan
DV-505	1.304/4	4	Australia
DV-505	N/A	2	Spain
DV-505	1.210/8	2	Luxemburg